



Billion BEsmart Service Packages

SG600 Smart Wireless Bridge

User Manual

Last Revised on Mar. 2013

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WARNING

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference
- (2) This device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. . This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Co-location statement

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

CHAPTER 1

Introduction

1.1 Introduction of BEsmart

The issue of environmental protection and energy conservation has been received great attentions since the global warming and energy shortage have become a serious worldwide crisis. Billion BEsmart highlights the importance of energy preservations and managements, and contributes smart solutions for Telco/ISP/SI service providers who dedicate to strengthening customer satisfactions. With the implement of the smart control, track, and monitor power consumption technologies, energy usage could be clearly examined and analyzed anytime and anywhere simply through a smart phone. It helps reduce energy waste, provide a green environment, and further increase the benefit of the mutual investment, that is, the investors and customers.

BEsmart brings a great amount of benefits with a long-term effect: Increase Average Revenue, Increase Customers' Satisfaction and Loyalty, Reduce Customers' Churn Rate, Leverage Existing Network Infrastructure, Bring GREEN and Carry Out CSR. Furthermore, BEsmart also provides effective power management, highly flexible on connection and establishment, and extended applications on other services. Creating a win-win situation for service providers and customers and establishing a green society are what BEsmart expect to accomplish.

1.2 BEsmart Application



The SG600 acts the role of coordinator, which processes the power data delivered from smart energy meters connected with electrical appliances by ZigBee to an xDSL cable modem/router and then transmits to the cloud with the internet access. All history information of power usage would be saved on the internet access. All history information of power usage would be saved on the cloud. BEsmart APP serves as a service platform for smart phone users to make connection to the cloud server. Hence, users are able to monitor the instant energy consumption status and review all the previous consumption records. Furthermore, you can take control of power on/off status remotely for the home appliances merely by a smart phone with an internet access.

CHAPTER 2

Device Description and Installation

This section specifies package contents, device descriptions, BEsmart kit installations, and network connections.

2.1 BEsmart Package Content and Specifications

§ SG600

Collect power information from each smart meter measure.

§ Smart Power Plug

Energy Management and Remote on/off Control

Comprehensive Measurement Capability

§ Smart Energy Meter





Remote power on/off control on connected electrical appliances

Electricity usage data and other indication information collection

§ Mobile App

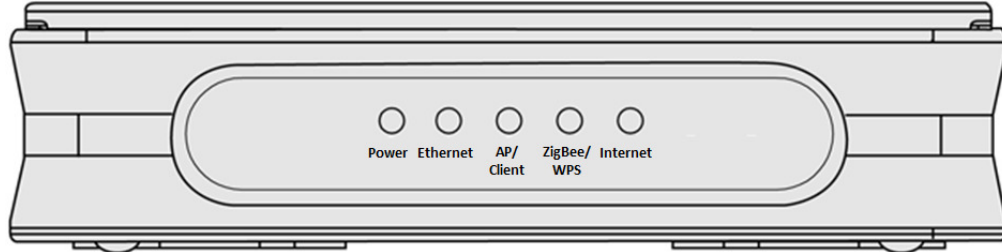
Straightforward user interface (UI) for easy operation

Multiple functions all in a single glance on the main menu

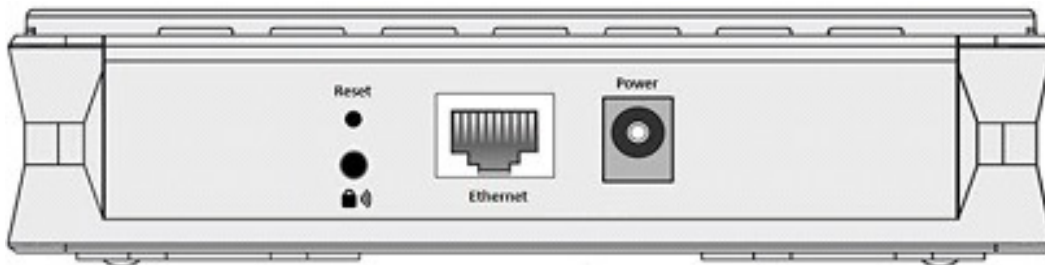
Smart Energy Gateway	Smart Power Plug	Smart Energy Meter Series	Mobile Apps
			
SG600	Power Plug	SG30xx Series	BEsmart

2.2 Device Descriptions

SG600 product overview



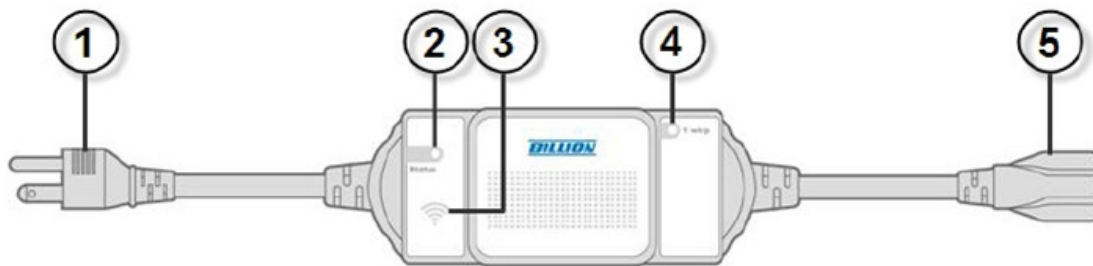
Power	Lit green when power is ON
Ethernet	Lit when one of LAN ports is connected to an Ethernet device.
AP/Client	Lit green when wireless client is working Blinking green when wireless client is not working
ZigBee/WPS	Blinking green quickly when ZigBee pairing mode is working Blinking orange quickly when WPS pairing mode is working
Internet	Lit green when SG600 is getting internet connection Lit red when wireless in not getting internet connection



Power	Connect it with the supplied power adapter.
Reset	To be sure the device is being turned on press RESET button for 6 seconds and above: restore to factory default settings. Caution: After pressing the RESET button for more than 6 seconds, to be sure you power cycle the device again.
Ethernet	Connect a UTP Ethernet cable (Cat-5 or Cat-5e) to one of the LAN ports when connecting to a PC or an office/home network of 10Mbps or 100Mbps.

ZigBee/WPS	<p>Push WPS button to trigger ZigBee function, thus smartmeter allowing join in is starting. See ZigBee Config section.</p> <p>Push WPS button more than 5 seconds to trigger Wi-Fi Protected Setup function. See WPS section.</p>
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SG3015-T1/3010-T1



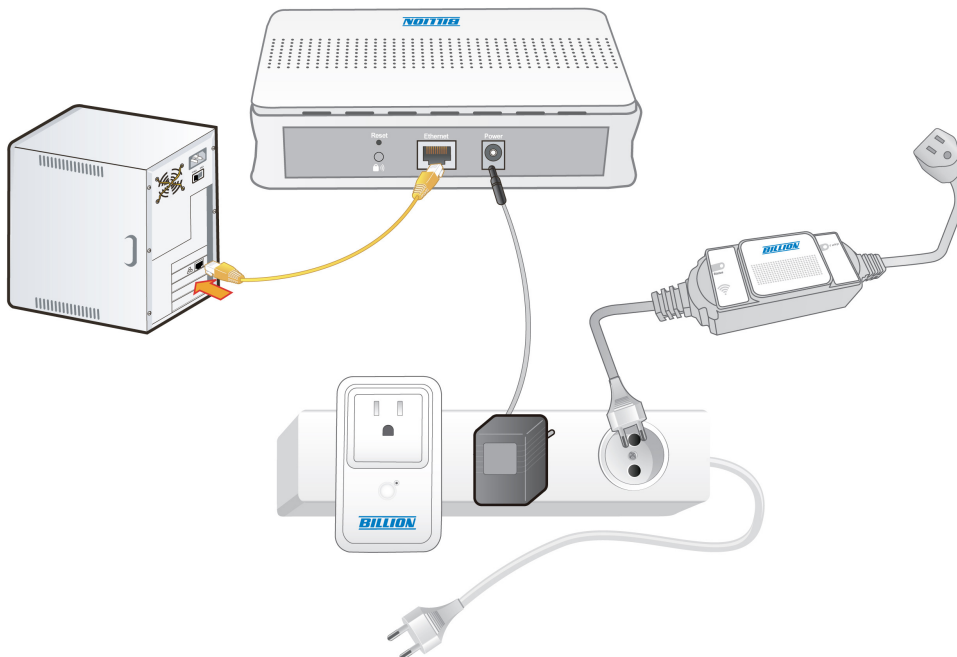
1	Power Plug	Put the plug in the power socket.
2	Status LED	<p>Lit green when the meter does not pair with SG6200NXL.</p> <p>Blinking green when the meter is pairing.</p> <p>Blinking green 5 time for 30 seconds when it reach the strongest signal.</p>
3	Power Meter Setting Hidden Button	<p>When Status LED lights, press the hidden button for 3~5 seconds until the LED blinks, indicating that the device is connected to wireless network.</p> <p>When Status LED blinks steadily, tap this button once to detect the signal strength.</p>
4	Energy Indicator	It would flash once when the electronic consumption has accumulated to 1wh (0.001kwh).

5	Power outlet	Plug in the electronic appliance that you intend to monitor to the power outlet.
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2.3 BEsmart Installation

It's easy to setup the power meter and power plug simply by following the instructions below. Also this section shows how the SG600 device connects to the SG3010-T1/SG3015-T1.

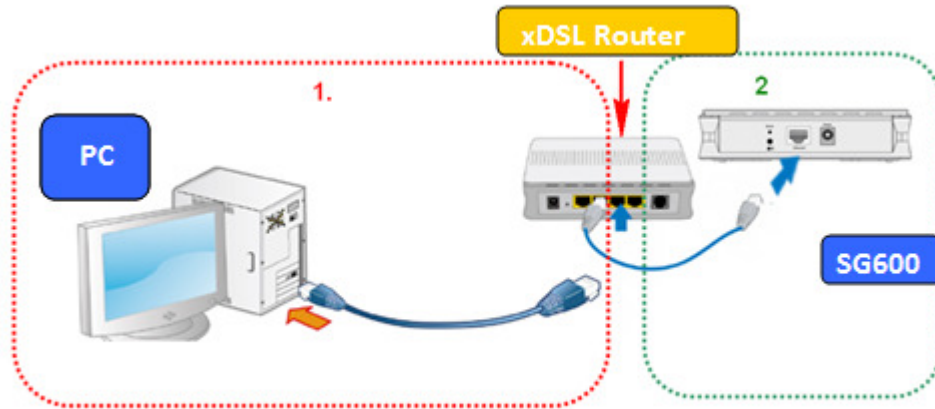
2.3.1 Device Configuration



The Illustration above demonstrates overall structure for device configurations. To construct the connection environment, you must prepare a PC, Billion SG600, a router, power meter(s), power plug(s), network connection provided by ISP, and power supply. For the configuration, please

refer to the following instructions

SG600---Internet (Router)---PC



Connect a XDSL router to PC with an Ethernet cable and prepare your SG600 and connect it to the router with the supplied RJ45 Ethernet cable or wireless client. Make sure the internet connection is workable (please refer to the next Network Configuration section). You can configure the SG600 and manage the power status through the web browser. For different internet environments, please refer to internet setting document.

Electric Appliance----Power Meter

Plug in the electric appliance to the power meter or home plug and make sure the power supply is on. Before managing the power information, you have to pair the meter with the router. For the connection process, please refer to 2.3.3 for device connection.

2.3.2 Network Configuration

The router can be configured through your web browser. A web browser is included as a standard application in the following operating systems: Linux, Mac OS, Windows 98/NT/2000/XP/Me/Vista/7, etc. The product provides an easy and user-friendly interface for configuration. Please check your PC network components. The TCP/IP protocol stack and Ethernet network adapter must be installed. If not, please refer to your Windows-related or other operating system manuals.

There are ways to connect the router, either through an external repeater hub or connect directly to your PCs. However, make sure that your PCs have an Ethernet interface installed properly prior to connecting the router device. You ought to configure your PCs to obtain an IP address through a DHCP server or a fixed IP address that must be in the same subnet as the router. The default IP address of the router is **10.10.10.252** and the subnet mask is **255.0.0.0** (i.e. any attached PC must be in the same subnet, and have an IP address in the range of **10.10.10.1** to **10.10.10.251**). If you encounter any problem accessing the router web interface it is advisable to uninstall your firewall program on your PCs, as they can cause problems accessing the IP address of the router. Users should make their own decisions on what is best to protect their network. Please follow the following steps to configure your PC network environment.



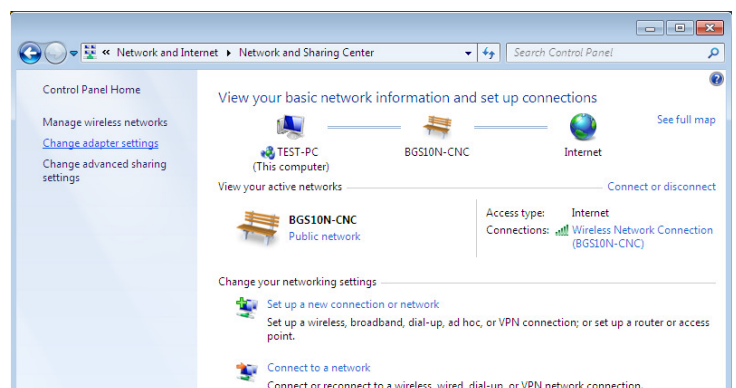
Any TCP/IP capable workstation can be used to communicate with or through this router. To configure other types of workstations, please consult your manufacturer documentation.

Configuring PC in Windows 7

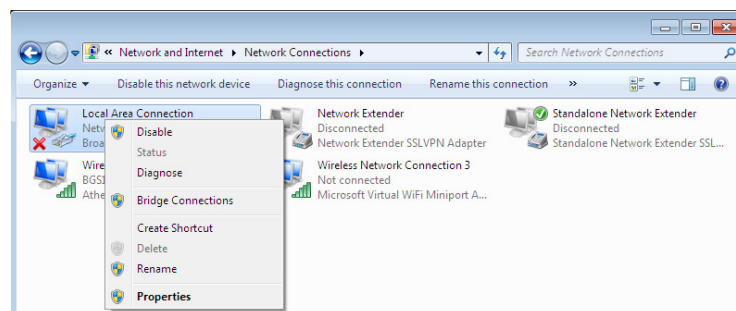
1. Go to Start. Click on Control Panel.
2. Then click on Network and Internet.



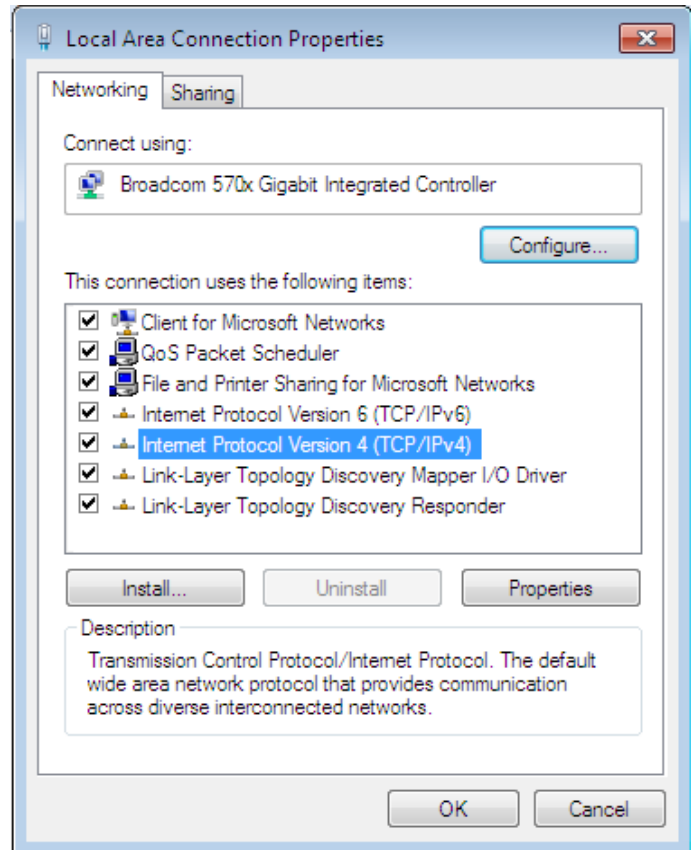
3. When the Network and Sharing Center window pops up, select and click on Change adapter settings on the left window panel.



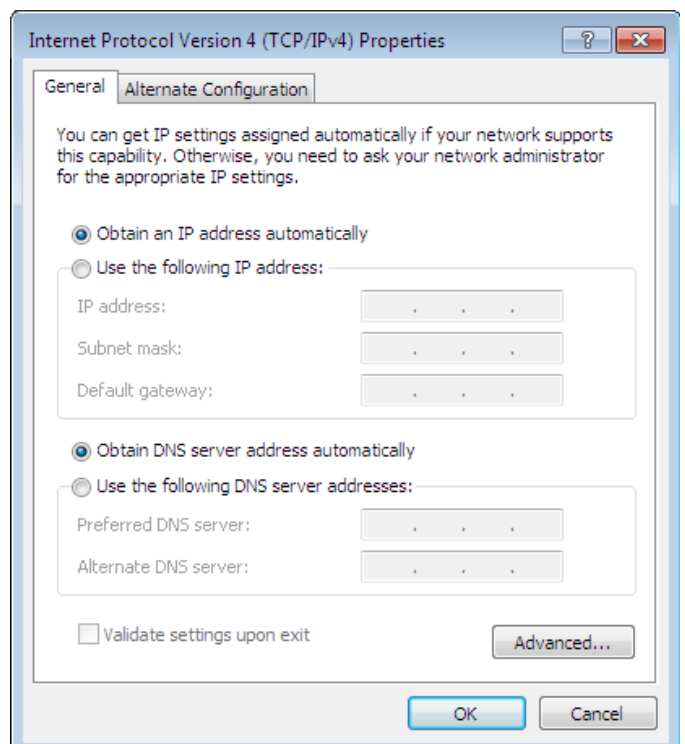
4. Select the Local Area Connection, and right click the icon to select Properties.



5. Select Internet Protocol Version 4 (TCP/IPv4) then click Properties.

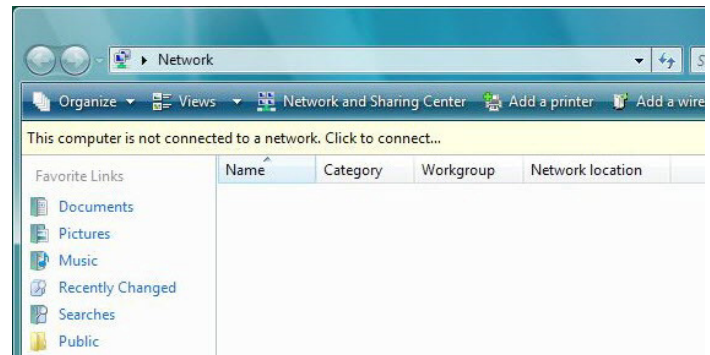


6. In the TCP/IPv4 properties window, select the Obtain an IP address automatically and Obtain DNS Server address automatically radio buttons. Then click OK to exit the setting.
7. Click OK again in the Local Area Connection Properties window to apply the new configuration.



Configuring PC in Window Vista

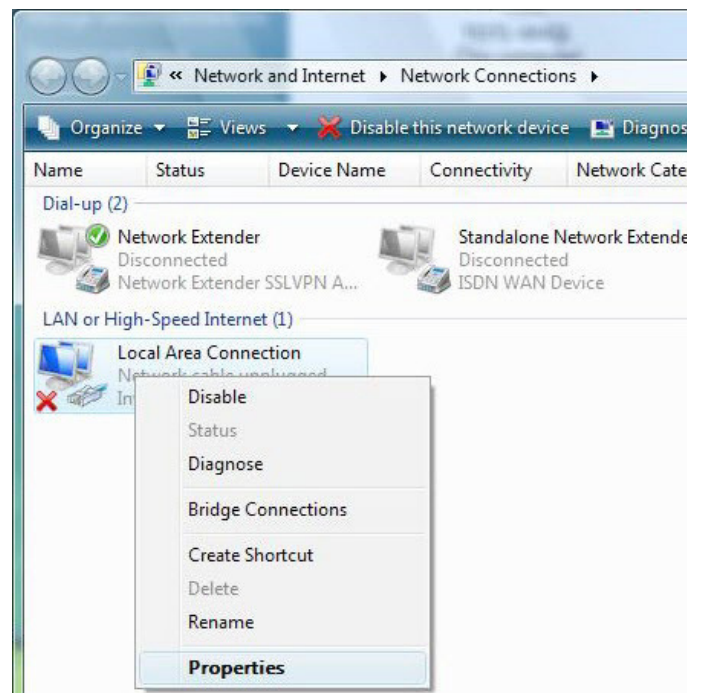
1. Go to Start. Click on Network.
2. Then click on Network and Sharing Center at the top bar.



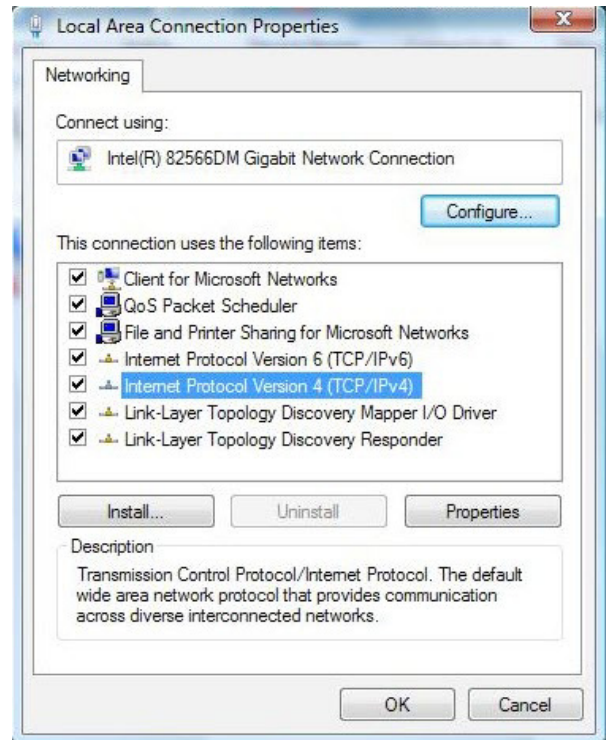
3. When the Network and Sharing Center window pops up, select and click on Manage network connections on the left window column.



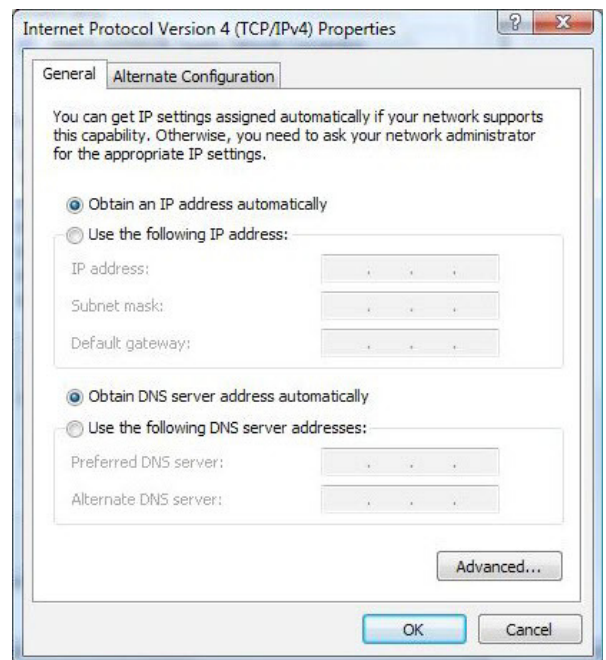
4. Select the Local Area Connection, and right click the icon to select Properties.



5. Select Internet Protocol Version 4 (TCP/IPv4) then click Properties.

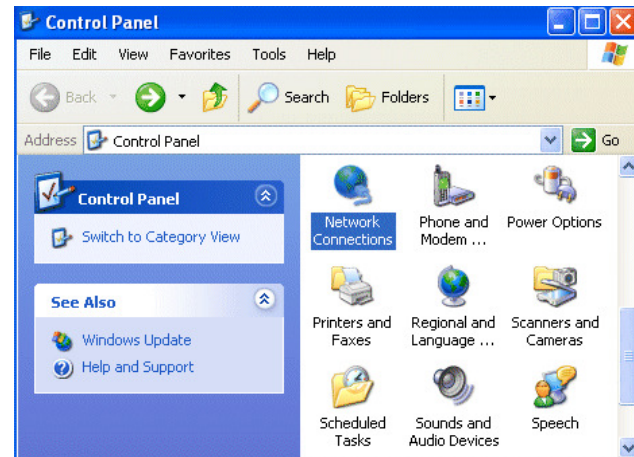


6. In the TCP/IPv4 properties window, select the Obtain an IP address automatically and Obtain DNS Server address automatically radio buttons. Then click OK to exit the setting.
7. Click OK again in the Local Area Connection Properties window to apply the new configuration.

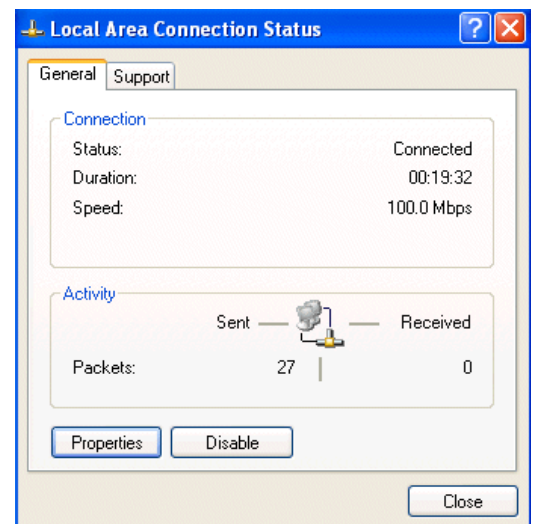


Configuring PC in Windows XP

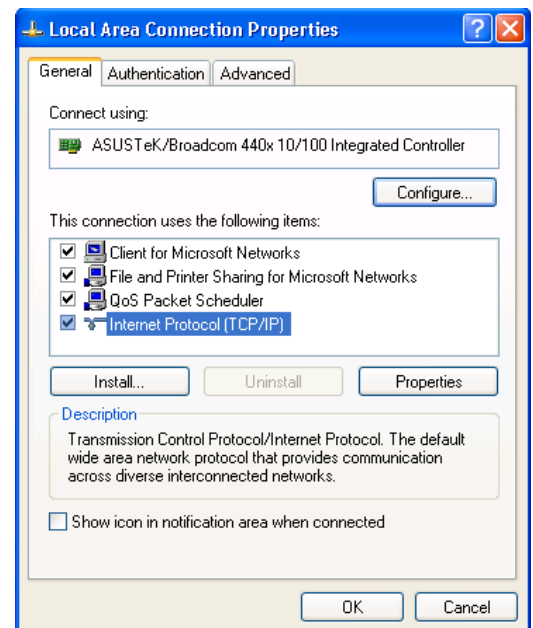
1. Go to Start > Control Panel (in Classic View). In the Control Panel, double-click on Network Connections
2. Double-click Local Area Connection.



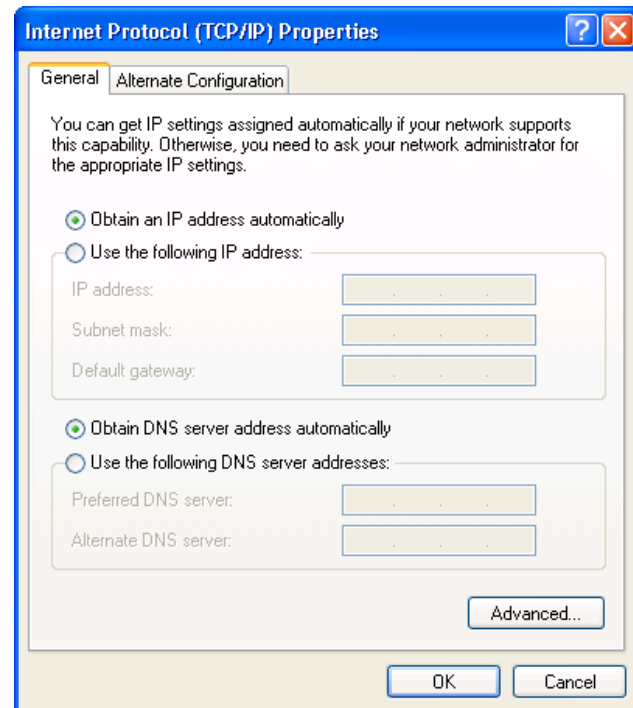
3. In the Local Area Connection Status window, click Properties.



4. Select Internet Protocol (TCP/IP) and click Properties.



5. Select the Obtain an IP address automatically and the Obtain DNS server address automatically radio buttons.
6. Click OK to finish the configuration.

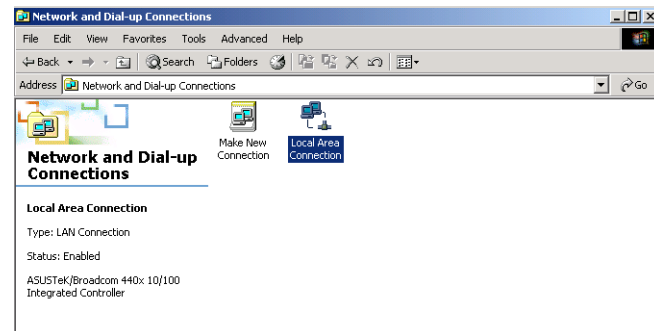


Configuring PC in Windows 2000

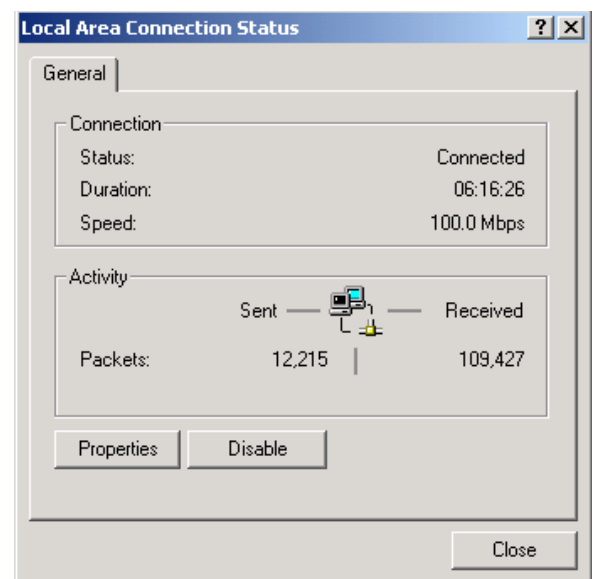
1. Go to Start > Settings > Control Panel.

In the Control Panel, double-click on Network and Dial-up Connections.

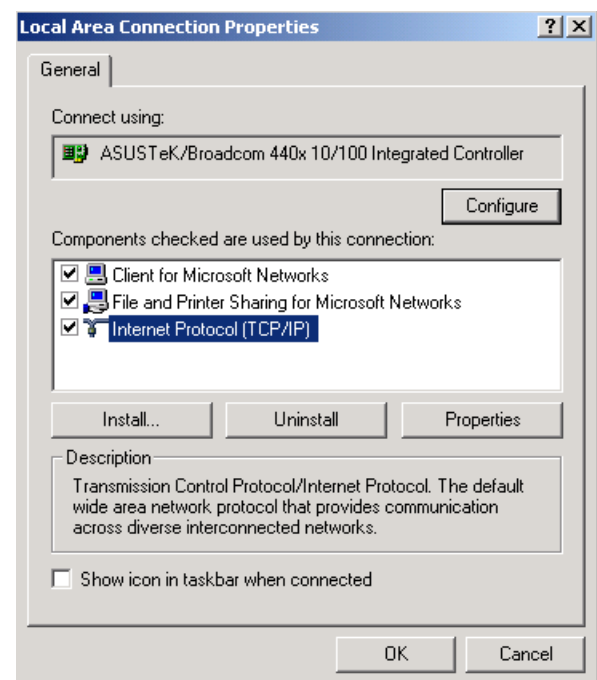
2. Double-click Local Area Connection.



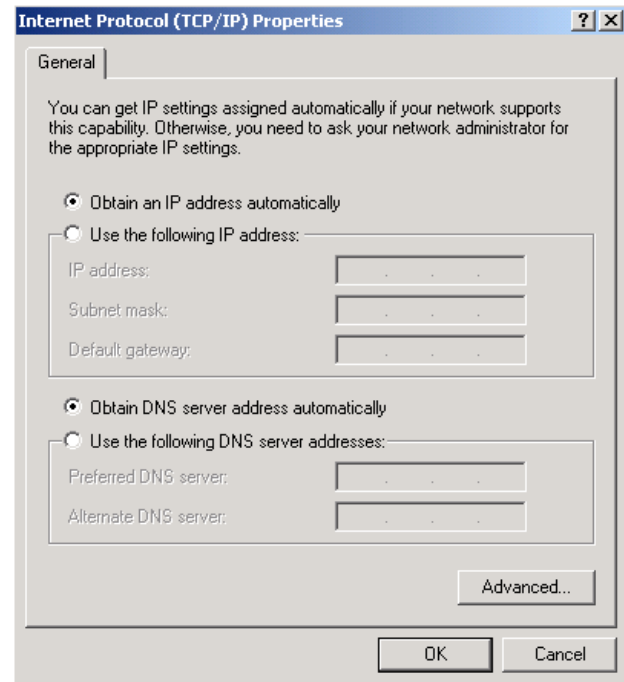
3. In the Local Area Connection Status window click Properties.



4. Select Internet Protocol (TCP/IP) and click Properties.

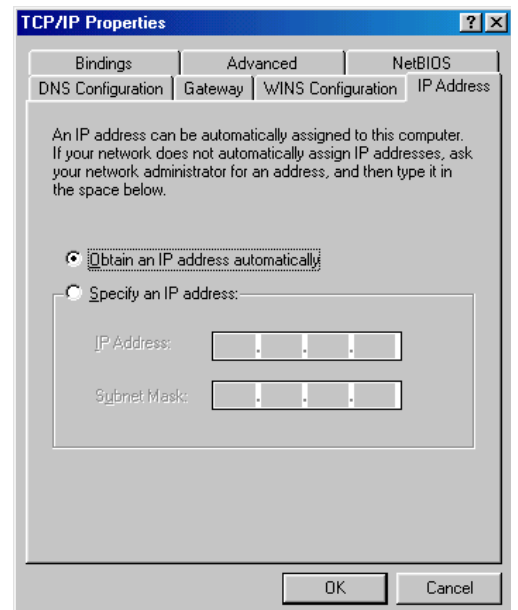
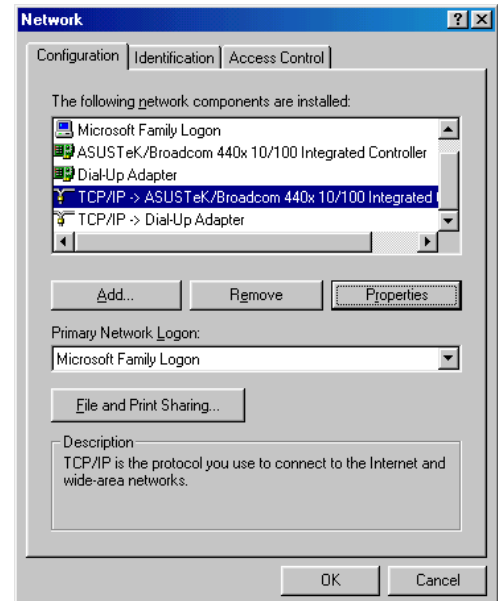


5. Select the Obtain an IP address automatically and the Obtain DNS server address automatically radio buttons.
6. Click OK to finish the configuration.

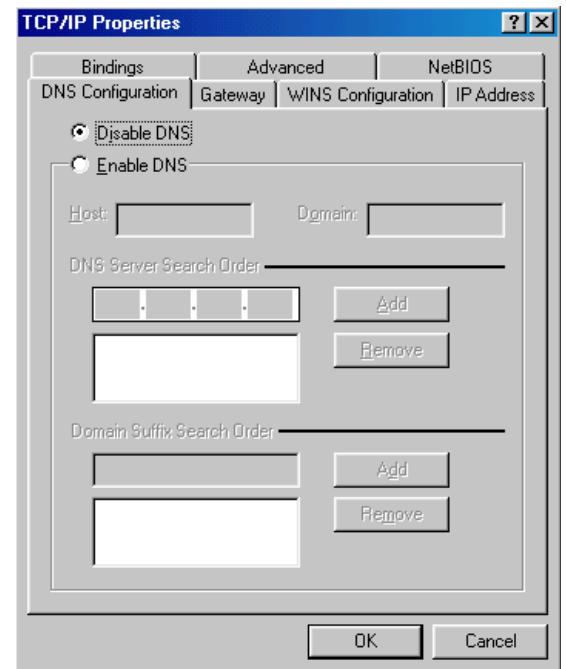


Configuring PC in Windows 95/98/Me

1. Go to Start > Settings > Control Panel.
In the Control Panel, double-click on Network and choose the Configuration tab.
2. Select TCP/IP > NE2000 Compatible, or the name of your Network Interface Card (NIC) in your PC.
3. Select the Obtain an IP address automatically radio button.

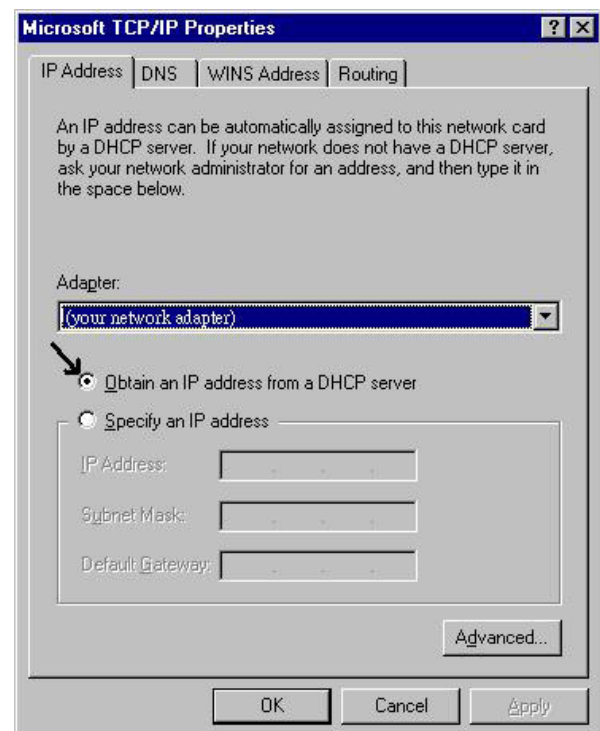
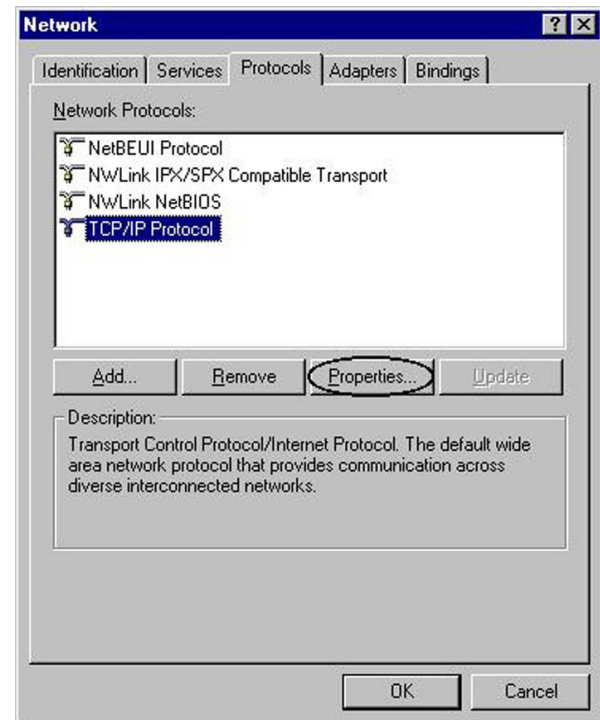


4. Then select the DNS Configuration tab.
Select the Disable DNS radio button and click OK to finish the configuration.
5. Select the Disable DNS radio button and click OK to finish the configuration



Configuring PC in Windows NT4.0

1. Go to Start > Settings > Control Panel.
In the Control Panel, double-click on Network and choose the Protocols tab.
2. Select TCP/IP Protocol and click Properties.
3. Select the Obtain an IP address from a DHCP server radio button and click OK.



Factory Default Settings

Before configuring your router, you need to know the following default settings.

Web Interface (Username and Password)

- ▶ Username: admin
- ▶ Password: admin

The default username and password are **“admin”** and **“admin”** respectively.

Device LAN IP settings

- ▶ IP Address: 10.10.10.252
- ▶ Subnet Mask: 255.0.0.0

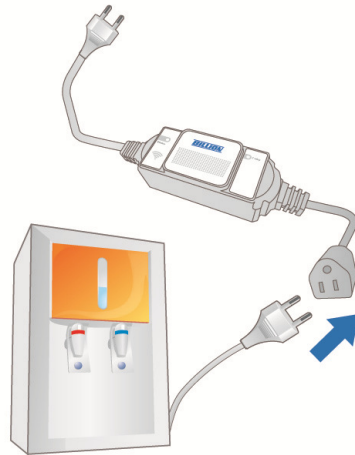
Information from your ISP

Before configuring this device, you have to check with your ISP (Internet Service Provider) to find out what kind of service is provided such as PPPoE, Obtain an IP Address Automatically (DHCP), Fixed IP Address (Static IP). Gather the information as illustrated in the following table and keep it for reference.

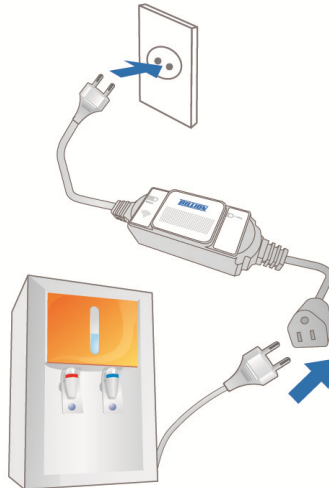
PPPoE	Username, Password, Service Name, and Domain Name System (DNS) IP address (it can be automatically assigned by your ISP when you connect or be set manually).
Obtain an IP Address Automatically	DHCP Client (it can be automatically assigned by your ISP when you connect or be set manually).
Fixed IP Address	IP address, Subnet mask, Gateway address, and Domain Name System (DNS) IP address (it is fixed IP address).

2.3.3 Device Connections

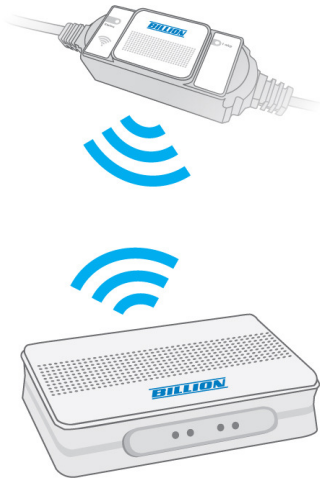
Step1: Plug in an electronic appliance that you intend to monitor to the power meter.



Step2: Plug in the Power Meter to the wall outlet/socket.



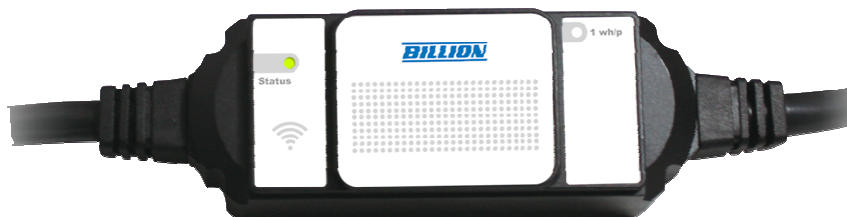
Step3: Set up the connection between the power meter and SG6200NXL
(Please refer to Device Pairing section for detail)



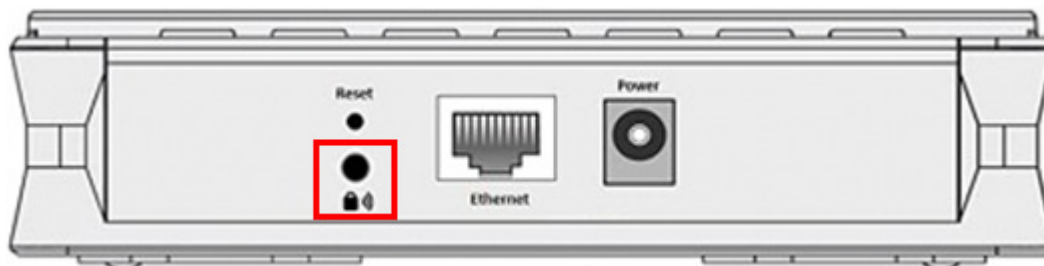
NOTE: Please ensure that the power meter has been turned off or the power supply has been cut off before setting up.

2.3.4 Pairing your smart meter

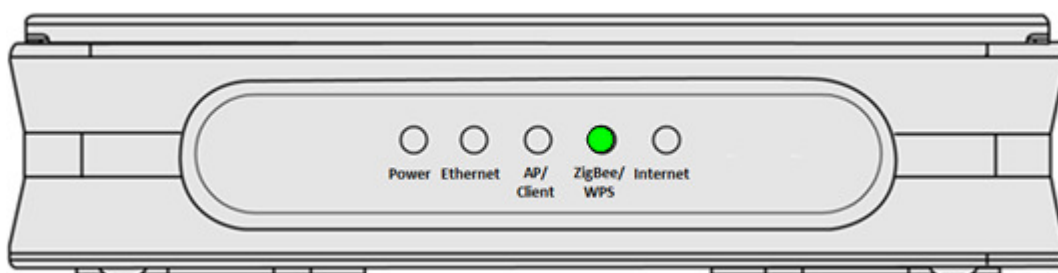
Step 1: After setting up the power connections, please check if the status LED light green before pairing.



Step 2: Push ZigBee button on the rear panel of SG600 to make a connection.



Step 3: Then, ZigBee/WPS LED in the front panel will blink quickly around 30 seconds.



Step 3: Press the hidden button of the power meter until the Status LED blink quickly with green light for few seconds. Then, the LED light would

blink slowly and steadily, which indicates that the modem and the power meter are successfully connected.



2.3.5 Un-pairing your smart meter

Before pairing the SG600 with smart power meters, please check if the status LED lights green. If the status LED blinks green, it means that the meter has been paired. Please un-pair the smart meter first then re-pair your own ZigBee Gateway.

Step 1: Reboot your smart meter. You have 30 seconds to un-pair your smart meter. Push hidden button of the power meter until the meter's status LED lights Green.



CHAPTER 3

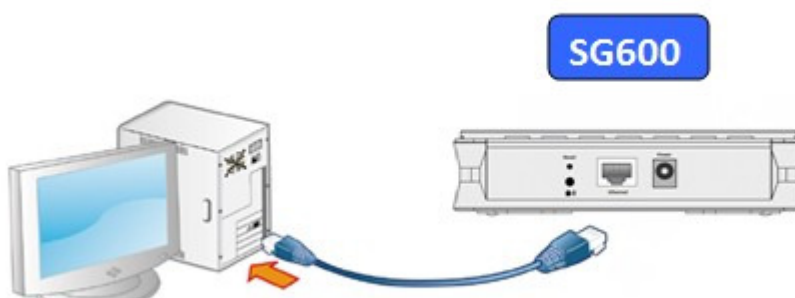
Installation of Web Manager

The router not only functions as a smart wireless bridge but builds Power Management Application into Web GUI. End users can monitor real time power information and control the Smart Energy Meter through Web GUI remotely. Please be noted that here we just focus on functions that are relevant to the power smart management. Let's start the configurations.

3.1 Quick Start

Step 1 : Hardware setting

Connect the SG600 to your PC's Ethernet interface with supplied RJ-45 Ethernet cable and the other side to a router or modem with Ethernet cable or wireless client for the internet connection.



Step 2: Computer IP setting

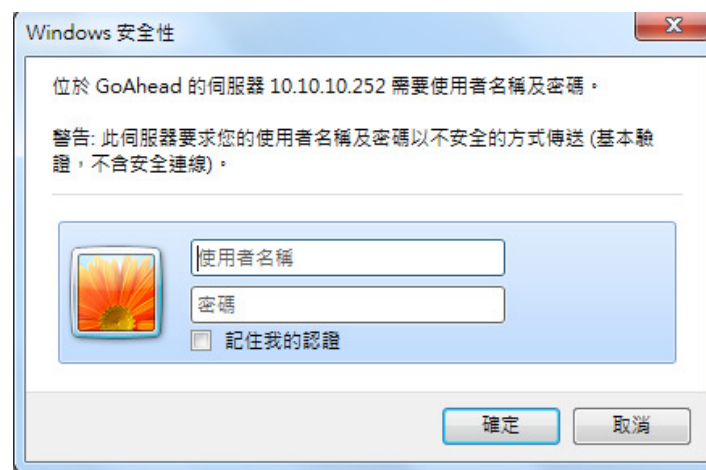
The default address of SG600 is **10.10.10.252**. For the first setting, please modify your PC IP to the recommended IP **10.10.10.100** (ranged from 10.10.10.1 to 10.10.10.251).

Step3: Access to SG600 WEB GUI

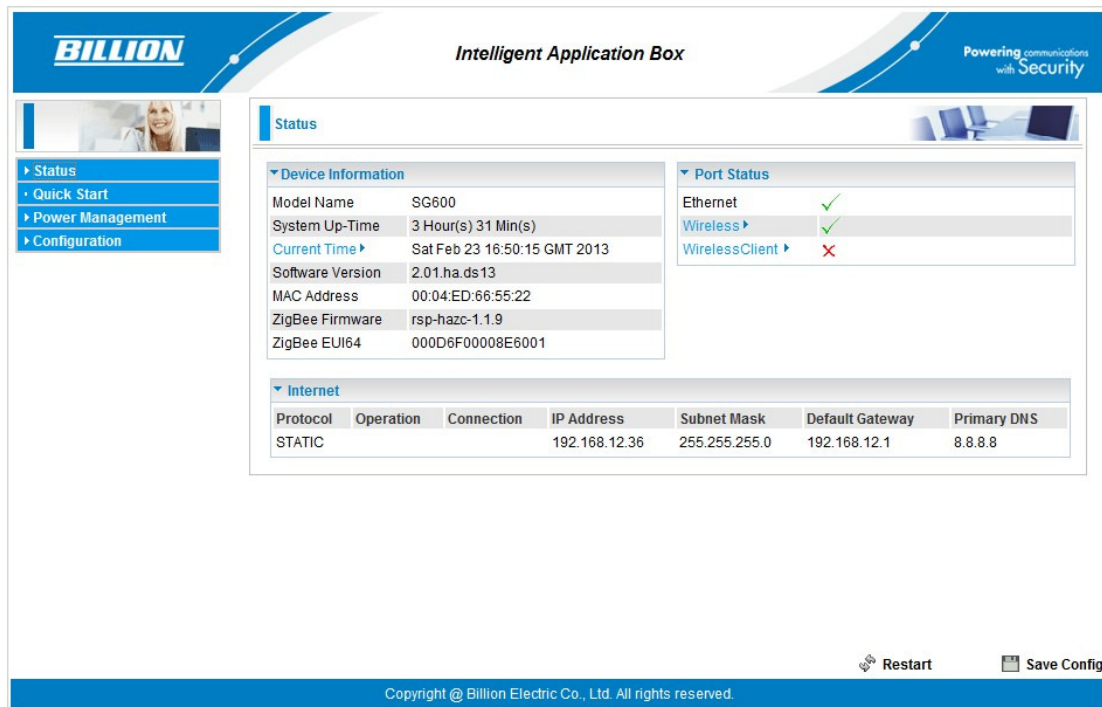
1. Open your web browser and enter the IP address of your router, which by default is **10.10.10.252**, and click “Go”. Then a login window prompt will appear.



2. The default username and password are “admin” and “admin” respectively. Choose “Administrator” from the account type to configure and manage the web settings if you are authorized to access the router.



3. Once you have logged in to your SG600, you can begin to set it up according to your requirements. You would see the main page of basic status, including Device Information, Port Status, and WAN information.



4. Time Zone Setting

First, set up the time to meet the time zone of your country. Click “Continue”.



5. SG600 provides the WAN interface based on your own backbone router.

There are 2 Connect Modes: **EWAN** and **Wireless Client**.

EWAN: Your backbone router/cable modem is based on Ethernet base.

Wireless Client: Your backbone router or cable modem has the Wi-Fi function.

For the detail Configuration, please refer to SG600 internet configuration document.

Quick Start

WAN Port (WAN > Wireless > BEsmart Register)

Select WAN Port

Connect Mode	EWAN (Recommended)
Protocol	Fixed IP Address
IP Address	192.168.12.36

6. There are 3 types of connection protocols available for WAN connect mode: **Obtain an IP Address Automatically**, **Fixed IP Address**, and **PPPoE** connection.

● **Obtain an IP Address Automatically (DHCP)**

When connecting to the ISP, your router also functions as a DHCP client. That is, your backbone device is xDSL router and your PC is assigned an IP address automatically.

● **Fixed IP Address (STATIC IP)**

Your backbone device is xDSL router and your PC IP is based on Static IP. Enter the information provided by your ISP

Quick Start

WAN Port (WAN > Wireless > BEsmart Register)

Select protocol

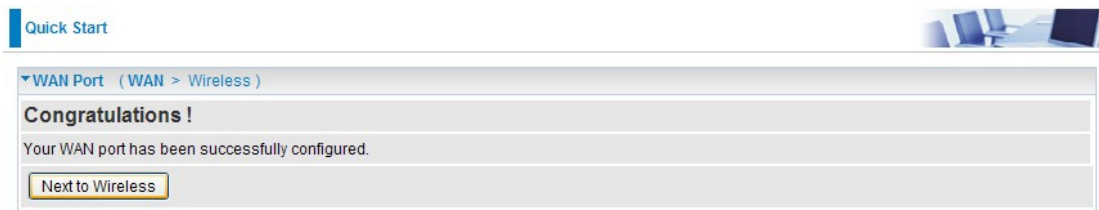
Protocol	Fixed IP Address
IP Address	192.168.12.36
Netmask	255.255.255.0
Gateway	192.168.12.1

● **PPPOE**

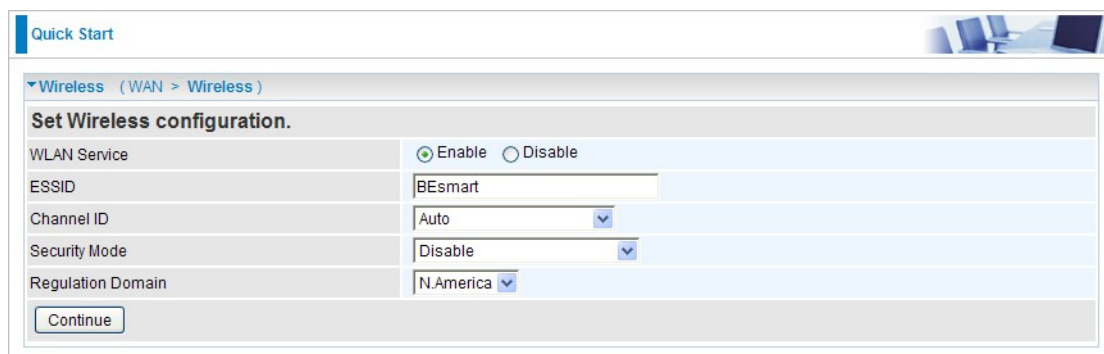
If your backbone device is xDSL cable modem, please choose PPPOE. For the detail internet configurations, please refer to SG600 internet settings.

Click “Continue” to proceed to the next step.

7. To set the Wireless configuration, click “Next to Wireless”.



8. Wireless setup



WLAN Service: Default setting is **Enable**.

ESSID: The ESSID is the unique name of a wireless access point (AP) to be distinguished from another. For security propose, change to a unique ID name to the AP which is already built-in to the router’s wireless interface. It is case sensitive and must not excess 32 characters. Make sure your wireless clients have exactly the ESSID as the device, in order to get connected to your network.



ESSID is case sensitive and must not excess 32 characters.

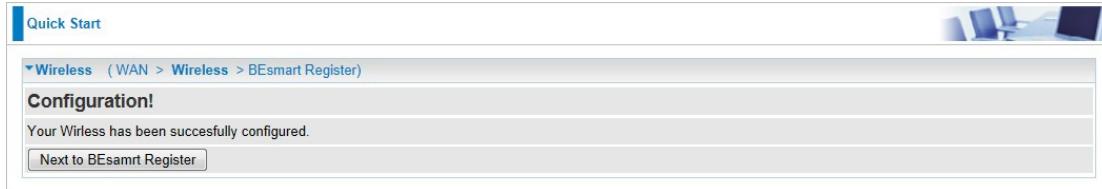
Channel ID: Select the ID channel that you would like to use.

Security Mode: You can disable or enable with WPA or WEP for protecting wireless network. The default mode of wireless security is **Disable**.

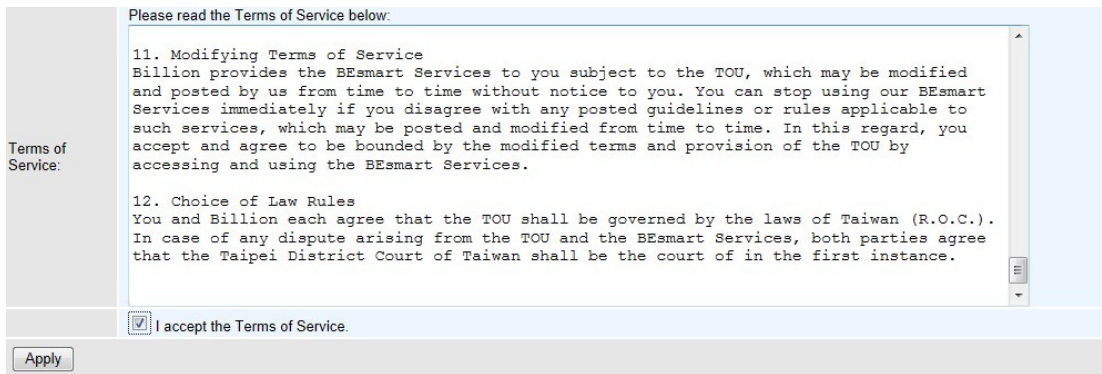
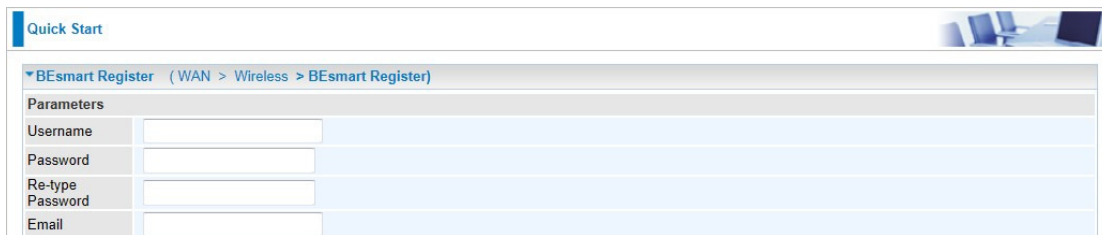
Regulation Domain: There are seven Regulation Domains for you to choose from, including **North America (N.America)**, **Europe**, **France**, etc. The

Channel ID will be different based on this setting.

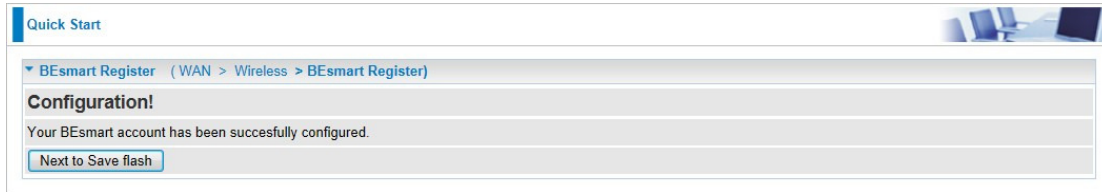
9. After clicking “Continue”, the program would start to save the settings. After successfully saving the settings, you would be directed to BEsmart Registration.



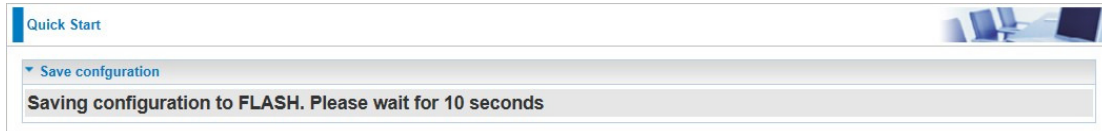
10. This is BEsmart Registration for cloud server. Create a username and password and offer the E-mail for the registration, then read the term and check the box “I accept the Term of Service”. Click “Apply” to confirm the application.



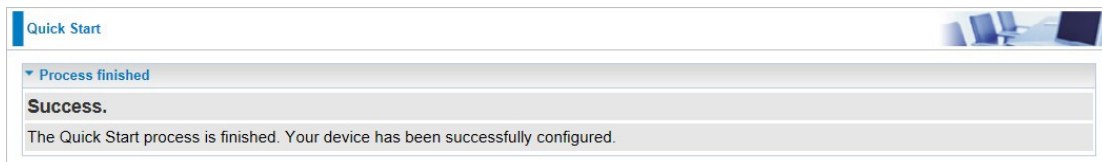
11. Congratulations! Your BEsmart cloud server has been successfully registered. All the received power information would be stored on the cloud. Click “Need to Save Flash” button to save your settings.



12. Please wait for 10 seconds for saving the configuration.



13. The easy configurations of your device have been finished.
Congratulations!



NOTE: Please ensure that the smart wireless bridge and its backbone router/modem are maintained in a connection status or it may result in different power consumption data between measurement and real condition.

